Digital payments and women's decision-making:
Evidence from China General Social Survey

Chenlu Hao (Corresponding Author)[1] Ni Hong[2]

Abstract

This study focuses on the impact of digital payments on women's decision-making power in China, using the difference-in-difference model on cross-sectional data. The results show that regions with higher levels of digital payments have higher decision-making scores, suggesting that the adoption of digital payments significantly increases women's decision-making power. The effects are found to be larger for women with off-farm jobs and from households with incomes above the median. Digital payments can increase women’s bargaining power by increasing women’s perceptions on self-confidence and gender equality.

JEL classification: D10; O10; O33
Keywords: Digital payments; Women’s decision-making power; Differences-in-differences; Intra-household bargaining; Financial Inclusion

1. Introduction

The use of digital payments promotes financial inclusion by providing a wide range of positive benefits that go well beyond convenience (Demirgüç-Kunt et al., 2022). Digital payments are cheaper and more secure than receiving payments in cash (Lee et al., 2021), and recipients also spend less time collecting payments. Account holders, especially women, can enjoy greater security and privacy in their transactions and have more say over their income and resources, which can increase their bargaining power and change family consumption decisions (Field et al., 2021). According to the collective family decision model (Browning et al., 2010) briefly introduced in Appendix 2, digital payments can be a distribution factor that affects women's intra-household decision-making power.

Figure 1 shows the trend of account penetration and digital payments in China from 2011 to 2021. In China, 82 percent of adults will use digital merchant payments in 2021, which is much higher than the average share in other developing countries. Therefore, it is worth studying how digital payments affect people in China, which will shed light on other developing countries in the future. Previous studies mainly focus on the effect of digital payments on consumption (Zhao et al., 2022; Liu et al., 2020), but few of them pay attention to the intra-household effect of digital payments on women. To fill this gap, this paper investigates the effect of digital payments on women's decision-making power in Chinese households. The hypotheses are:

H1: The use of digital payments improves women's decision-making power in Chinese households.

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[1] Department of Applied Economics, Antai College of Economics and Management, Shanghai Jiao Tong University, Shanghai, China
Correspondence: hcl12321@sjtu.edu.cn
ORCiD: https://orcid.org/0000-0003-2701-7593
[2] Department of Applied Economics, Antai College of Economics and Management, Shanghai Jiao Tong University, Shanghai, China
Correspondence: hn_neon@163.com
ORCiD: https://orcid.org/0000-0001-5112-4677

H2: The impact of digital payments on decision-making power is heterogeneous across job types and household income.

H3: The effects are mediated by women's perceptions of self-confidence and gender equality.

(Figure 1)

2. Data and Methodology

Our study uses data from the China General Social Survey 2017, matched with the Peking University Digital Financial Inclusion Index of China (PKU_DFII). PKU_DFII, described in Table A1, is based on Alipay's transaction data, China's largest digital financial platform (Guo et al., 2020). We measure digital payment use in each province using PKU_DFII's payment sub-index, reflecting the frequency and number of digital payments per capita and the proportion of high-frequency users.

To measure women's decision-making power, we adopt Kochar et al.'s (2022) approach and use the CGSS 2017 question: "How much of the distribution of household expenditures is up to you?" Women rank their involvement on a scale of 1 to 5 (1 = none; 2 = a little; 3 = some; 4 = most; 5 = all), with a higher mean score indicating greater participation in household decision-making.

Our identification strategy, following Duflo (2001), uses cross-sectional variation in program intensity to identify program effects through difference-in-difference regressions. We leverage two sources of variation in digital payment use: the effect on decision-making before and after digital payment adoption and the variation in the effect across provinces with different levels of digital payments. Differences in these differences can be interpreted as the causal effect of digital payment use, under the assumption that in the absence of digital payment, the increase in decision-making power would not have been systematically different in low- and high-level provinces. This controls for possible endogenous variation in payment levels caused by factors such as better economic conditions and more digital infrastructure. This strategy can be generalized to a regression framework:

$$wdms_{ij}=\beta_0+\beta_1 P_i+\beta_2\left(L_j P_i\right)+\beta_3\left(C_j P_i\right)+p_j+\varepsilon_{ij} \tag{1}$$

Where $wdms_{ij}$ is the decision-making score of female individual i living in province j, P_j is a dummy indicating whether this woman uses digital payments, p_j is province fixed effect, L_j denotes the level of digital payments in province j, and C_j is a vector of region-specific variables. β_2 represents how much of an increase in decision-making ability does a higher level of provincial digital payment brings to women who use it, compared to a lower level.

In addition, we also include other regression frameworks (Kochar et al., 2022) that can add more robustness to the baseline results from the perspective of personal behavior of digital payment adoption:

$$wdms_{ij}=\alpha_0+\alpha_1 P_i+\alpha_2\, high_j+\alpha_3\left(P_i\times high_j\right)+\alpha_4 X_i+u_{ij} \tag{2}$$

Where L_j is replaced by a dummy variable $high_j$, representing whether province j has a payment level above the median value, and X_i represents a set of personal, family and provincial control variables. An α_3 significantly greater than 0 means that women benefit more from the adoption of digital payments in provinces with high payment levels. The summary statistics of the main variables are presented in Table 1.

(Table 1)

3. Results and Discussion

3.1 Effect of digital payment on women's decision-making score

We tested the baseline regression framework and reported the results in Table 2. Columns 1-4 are for equation (1). In Column 1, the specification controls only for the use cohort dummy and the interaction with provincial payment level. Other control variables and the province fixed effect are included in the specification in Column 2-3. In column 4, we use ordered probit regression for robustness since the decision score is ordinal. The results suggest that increasing the payment level of a province significantly increases the decision-making score of women using digital payment by about 1 per 100 units. Columns 5-7 are the results of Eq. (2) without and with additional control variables. Compared to women in low payment level, using digital payment increases the decision-making score by 0.131, while the decision-making score of women in high payment level provinces is raised by 0.386 and 193.7% more than the former. The results change only slightly using ordered probit regression in column 7. It is worth noting that women without digital payments in high payment provinces have lower decision scores in columns 5-7. This can be explained by the goal of digital financial inclusion, which is to enable people who are excluded from traditional finance and tend to be more economically vulnerable.

(Table 2)

3.2 Validity test

To corroborate the common trend, we use an alternative measure of women's decision-making power that was determined before the introduction of digital payments: age at marriage, which is widely used to reflect women's bargaining power in marriage. As in Table 3, column 1, the two cohorts in provinces with different payment levels do not have pre-trend differences in decision-making power as indicated by age at first marriage.

For falsification tests, we first consider "ineffective treatments": replacing digital payment with participation in health and pension insurance, two of the traditional financial services, in the interaction terms of the independent and control variables. Moreover, provinces with higher levels of digital payments may also be provinces that differ in terms of other development indicators. To address this, in column 4 we report regressions that interact digital payments with female literacy. Columns 2-4 show that these treatments have no effect on the results. We then test for "unaffected outcomes" in columns 5-6 and find that the effect of the interaction term is insignificant for outcomes that should not be affected, including the number of real estate properties and children under 18.

Taken together, the results of the common trends and falsification tests strengthen the robustness of the methodology. The coefficient on the interaction term in equations (1) and (2) can be interpreted as the effect of digital payments on women's decision-making power.

(Table 3)

3.3 Heterogeneity

We examine treatment heterogeneity across job types and household income to know whether digital payments affect women in a comprehensive way. From columns 1 to 3, we find that women with non-agricultural jobs benefit the most from digital payments, followed by women with agricultural jobs, and women who are unemployed benefit the least. Then, for households with different incomes, we look at two cohorts below and above the median in columns 4-5. The results show that although the decision score of women in two cohorts increases significantly due to digital payment, women in households with income above the median benefit more. Thus, the promotion of digital payments increases women’s decision-making power in general, and especially for women with off-farm jobs and in high-income households.

(Table 4)

3.4 Potential mechanisms

Several other factors can act as mediators and will be affected by digital payments, thus affecting women’s decision-making and bargaining power in households. According to Agarwal (1997), women’s greater control over assets will increase their sense of economic security and self-confidence, change social perceptions of deservingness and prevailing norms, and thus increase their bargaining power. In the CGSS 2017, there are several questions on self-confidence and perceptions of gender equality. We generate two variables on self-confidence and gender equality perceptions scores, and the mediation effects are presented in Table 5. Women adopting digital payments in higher level provinces are more confident and supportive of gender equality, and both mediators have significant effects on women’s decision score. The direct effects of digital payment become smaller when the mediators are added.

(Table 5)

4. Conclusions

This study examines the relationship between digital payments and women’s decision-making power. Digital payment is a type of digital financial inclusion service that aims to improve the situation of people excluded from traditional finance and expected to improve women’s bargaining and decision-making power in vulnerable households. We confirm the positive effect of digital payment on women’s decision-making power using a difference-in-difference strategy applied to a comprehensive dataset, and the results are robust to common and falsification tests. Women in households with off-farm jobs and in high-income households benefit the most from digital payments, which significantly improves their decision-making power in Chinese households. Policymakers should continue to promote policies related to digital financial inclusion.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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